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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,850	08/02/2001	Hiroyuki Tomita	862.C2323	5660

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NEW YORK, NY 10112

EXAMINER

FRANK, ELLIOT L

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 10/31/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/919,850

Applicant(s)

TOMITA, HIROYUKI

Examiner

Elliot L Frank

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-28 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 11-28 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED FINAL ACTION

Response to Amendment

- ✓ 1. The following **FINAL** office action is a response to applicant's amendment (A) filed 17 September 2003.
- ✓ 2. Items 1-5 cited in the prior office action were related to perceived problems with the specification and/or drawings. These items, which were corrected or addressed by the applicant, have been considered and are now accepted.
- ✓ 3. Claims 1-10 have been cancelled. Claims 11-17 remain restricted from the previous office action and claims 18-28 have been added to further "amplify the distinctions between the present invention and the cited art" per amendment (A), page 23.

Response to Arguments

- ✓ 4. Applicant's election with traverse of group 1, claims 1-10, in Paper No. 6 is acknowledged.
 - a. The traversal is on the ground(s) that the two groups are so closely related in the field of exposure that a proper search of any of the claims would, of necessity, requires a search of the others.
 - b. This is not found persuasive because claims 1-10 have been cancelled and new, more diverse claims 18-28 have been substituted in lieu of the original group. While the original restriction would have been maintained due to the fact that claimed inventions would have necessitated a search in two

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completely different art areas (355/30 and 700/108), the new claims are considered to be a further departure from the previously restricted material due to the focus of the claims being refined to the specific gases used, and the conditions of how they are used, in the instant invention.

c. The requirement is still deemed proper and is therefore made **FINAL**.

- ✓ 5. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection. Claims 18-28 have been considered and treated in this office action.

Claim Objections

- ✓ 6. Claim 28 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Dependant claim 28 requires a exposure method that does not further limit the apparatus of claim 18 from which it depends.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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- ✓ 8. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- ✓ a. Claim 28 recites the limitation "the object" in line two of the claim. There is insufficient antecedent basis for this limitation in the claim.
- ✓ b. Claim 28, while being deemed indefinite, has been examined as best understood by the examiner.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. No weight has been given to the preamble of claim 18. "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim or if the claim preamble is 'necessary to give life, meaning and vitality' to the claim, then the preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298 (Fed. Cir. 1995). In *Pitney Bowes*, the preamble was read into the claim because the subject matter in the body of the claim was considered to be "intimately meshed with the ensuing language in the

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claim” wherein limitations in the claim could only be understood in terms of the preamble. *Id.* In contrast, the preamble of claim 18 in the instant invention merely recites the manner in which the apparatus defined in the body of the claim is used. Since, the meaning of the body of the claim is readily apparent without further definition, and it's application is not limited to the subject matter area of the preamble, no weight has been given to the preamble of the claim.

11. The term “comprising” is an open-ended term. “The transitional term ‘comprising’ which is synonymous with ‘including’, ‘containing’ or ‘characterized by’ is inclusive or open-ended and does not exclude additional, unrecited elements or method steps.”

See MPEP § 2111.03.

12. Claim 18 is rejected under 35 U.S.C. 102(e) as being anticipated by Komaba (USPN 6,244,923 B1).

The limitations of claim 18, as well as the applicable citations in Komaba are as follows

18. An exposure apparatus comprising:
a first space filled with a helium gas (column 1 lines 13 to 20); and
a second space filled with a nitrogen gas (the examiner takes “Official Notice” that it is well known that air, which surrounds a balloon, is made up mostly of Nitrogen gas),

wherein a pressure of the first space is higher than the second space (column 3, line 66-column 4, line 8).

The limitations of claim 18 are read in entirety in Komaba et al.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 18,22,23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magome et al. (US 2002/0145711 A1).

The limitations of the aforementioned claims, and the applicable citations in Magome et al., are as follows:

18. (New) An exposure apparatus comprising:

a first space filled with a helium gas (page 2, paragraph 0018); and

a second space filled with a nitrogen gas (figure 4 of Magome et al. illustrates a system where pipes 31a,b provide He to chambers 6 and the PL of the apparatus while pipe 88 provides N₂ to chambers CH1 and CH2),

wherein a pressure of the first space is higher than that of the second space (While not expressly stated in Magome et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to have set the Helium space pressure higher than the Nitrogen space pressure given the teaching of preventing the gases in the adjacent environments from mixing (page 13, paragraph 0114) in view of the lower atomic weight and other related properties of Helium that were well known in the art per Magome et al. at page 1, paragraph 0007).

22. (New) The apparatus according to claim 18, further comprising: a helium gas supply means for supplying the helium gas into the first space; a first exhaust means for exhausting an internal gas of the first space; a nitrogen gas supply means for supplying the nitrogen gas into the second space; and a second exhaust means for exhausting an internal gas of the second space (figure 4 of Magome et al. illustrates a system where pipes 31a,b provide He to chambers 6 and the PL of the apparatus while pipe 88 provides N₂ to chambers CH1 and CH2. The gas is exhausted through pipes 93-96).

23. (New) The apparatus according to claim 18, further comprising a projection optical system for projecting exposure light from a pattern to an object to be exposed, wherein the first and second spaces are formed in the projection optical system (page 1, paragraph 0002).

28. (New) A device manufacturing method comprising: exposing the object by using the exposure apparatus according to claim 18; and developing the exposed object (page 1, paragraph 0002).

The limitations of claims 18,22,23 and 28 are obvious in view of Magome et al.

15. Claims 19-21 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Magome et al. (US 2002/0145711 A1) in view Tanaka et al. (US 2003/0020888 A1).

Claims 19-21 and 24-27 depend from claim 18. Claim 18 has been shown to be obvious in view of Magome et al.

While Magome et al. reads on the instant invention by providing an exposure apparatus with gas filled chambers of different refractive indexes, it does not specifically recite the additional limitations of claims 19-21 and 24-27 wherein the structures of the apparatus are described.

Tanaka et al., analogous to Magome et al. in that both are exposure apparatus systems (Tanaka, page 1, paragraph 0004), reads on the additional requirements of the aforementioned claims as follows

19. (New) The apparatus according to claim 18, wherein the first and second spaces are adjacent to each other (figure 1, items 310 and 311).

20. (New) The apparatus according to claim 19, wherein the first and second spaces are adjacent to each other via an optical element (page 5, paragraphs 0054-0056 and figure 1, optical item 301 separates items 310 and 311).

21. (New) The apparatus according to claim 18, wherein the pressure difference between the first and second spaces is not more than 1,000 Pa (It would have been obvious to have provided a pressure difference not more than 1,000 Pa due to the well known effect that the gas pressure has on the optical performance of the exposure device per page 1, paragraph 0012).

24. (New) The apparatus according to claim 18, wherein the first space is substantially closed except for an opening portion of the helium gas supply means and the first exhaust means (Pages 14-15, paragraph 0154 and figure 8).

25. (New) The apparatus according to claim 24, further comprising: a detection unit which detects the pressure of the first space; and an operation unit which

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operates the pressure of the first space based on the detection result of the detection unit (pages 5-6, paragraphs 0056-0057).

26. (New) The apparatus according to claim 18, wherein the second space is substantially closed except for an opening portion of the nitrogen gas supply means and the second exhaust means (Pages 14-15, paragraph 0154 and figure 8).

27. (New) The apparatus according to claim 26, further comprising: a detection unit which detects the pressure of the second space; and an operation unit which operates the pressure of the second space based on the detection result of the detection unit (pages 5-6, paragraphs 0056-0057).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the features of Tanaka et al. into the Magome et al. system to have created an exposure apparatus that allows the pressure in an airtight chamber within the projection optical system to be adjusted after the atmosphere in the airtight chamber is replaced with a specific gas and a method of adjusting pressure in the projection optical system (Tanaka et al., page 2, paragraph 0019).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

USPN 6,138,670 A – Delauze et al. – Helium and Nitrogen decompression system

USPN 5,877,843 A – Takagi et al. – Exposure system

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17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
18. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elliot L Frank whose telephone number is (703) 305-5442. The examiner can normally be reached on M-F 7-4:30, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5484.

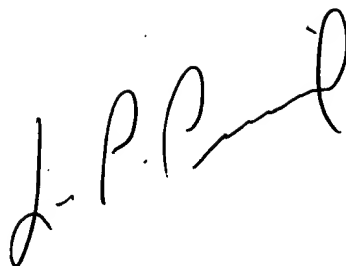
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ELF

October 24, 2003

A handwritten signature in black ink, appearing to read 'L. Picard', written in a cursive style.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100